

[0088] (10) The metal lines exhibit low resistance and hence, the detection can be performed digitally. Accordingly, this embodiment can realize a high-speed and high-definition detection whose detection speed and detection accuracy are approximately 100 times or more higher than corresponding detection speed and detection accuracy of a conventional analog detection mechanism adopting a resistive film system.

[Wiring Layout Mode 2]

[0089] FIG. 12 is a perspective view of another touch panel according to this mode. The wiring layout mode 2 is a modification of wiring layout mode 1. In this mode, wirings for detection which face each other in an opposed manner are changed in structure. FIG. 12 differs from FIG. 9 in that a transparent electrode made of ITO is used as the wiring arranged on the first substrate SUB1, and the ITO covers a whole surface of a detection area. By using this mode, it is possible to realize the enhancement of reliability, the increase of a detection speed, and a simple multipoint detection mechanism.

[Wiring Layout Mode 3]

[0090] FIG. 13 is a perspective view of another touch panel according to this mode. The wiring layout mode 3 of this mode is a modification of the wiring layout mode 1. In this mode, wirings for detection which face each other in an opposed manner are changed in structure. FIG. 13 differs from FIG. 12 in that the wiring arranged on the second substrate SUB2 is formed of a mesh of metal lines. By forming the metal wiring pattern as the mesh (lattice), the touch panel can be formed as a substitute for the resistance film. Accordingly, this mode can mainly contribute to the increase of the detection speed and the enhancement of reliability. In addition, by using two-dimensional patterning, the multipoint detection mechanism can be realized with a high speed and high accuracy even in combination with a conventional transparent electrode system. Further, although there may be a problem in terms of cost, a system which overcoats a fine metal pattern section with a transparent electrode is effective to realize large-sizing of a display device.

[Wiring Layout Mode 4]

[0091] FIG. 14 is a schematic plan view of a touch panel according to a modification of this mode. FIG. 14 differs from FIG. 9 in that a terminal PAD for combining a plurality of metal lines MLINE is provided in order to detect voltages of the plurality of metal lines MLINE simultaneously, and a detection signal is outputted from each terminal PAD. When the coordinate detection of high accuracy is unnecessary, the plurality of metal lines MLINE are combined so as to enhance a recognition rate. This mode is applicable to the stripe-shaped metal wiring in the wiring layout modes 1 and 2.

[Wiring Layout Mode 5]

[0092] FIG. 15 is a schematic plan view of a touch panel according to a modification of this mode. FIG. 15 differs from FIG. 9 in that the plurality of metal lines MLINE are made to extend up to external terminals formed on a resin while gradually decreasing a wiring pitch outside a detection area. In other words, without forming the external terminals and lines MLINE-F extending up to the external terminals on a substrate different from the base film, the external terminals and lines MLINE-F are formed on the same base film on which

the plurality of metal lines MLINE are formed. This mode is applicable to the stripe-shaped metal wiring in the wiring layout modes 1 to 4. By adopting the wiring layout modes 1 to 4 in this manner, it is possible to simultaneously form the metal pattern and the flexible cable pattern for connection with circuits. A touch panel section and flexible cables are formed on the integral continuous resin thus realizing the reduction of the number of parts, the enhancement of reliability in connection, and the reduction of cost.

[Wiring Layout Mode 6]

[0093] FIG. 16 is a cross-sectional view of a substrate constituting a touch panel according to a modification of this mode. FIG. 16 differs from FIG. 11 in that stripe-shaped transparent lines TLINE having the same pattern as the pattern of the metal lines MLINE are arranged under the metal lines MLINE. This mode is applicable to the stripe-shaped metal wiring in the wiring layout modes 1 to 5.

[Wiring Layout Mode 7]

[0094] FIG. 17 is a cross-sectional view of a substrate constituting a touch panel according to a modification of this mode. FIG. 17 differs from FIG. 11 in that the transparent wiring (electrode) TLINE which covers a whole surface of a detection area is arranged under the metal lines MLINE. This mode is applicable to the stripe-shaped metal wiring in the wiring layout modes 1 to 5.

[Wiring Layout Mode 8]

[0095] FIG. 18 is a cross-sectional view of a substrate constituting a touch panel according to a modification of this mode. FIG. 18 differs from FIG. 11 in that the transparent wiring (electrode) TLINE which covers a whole surface of a detection area is arranged above the metal lines MLINE. This mode is applicable to the stripe-shaped metal wiring in the wiring layout modes 1 to 5.

[Wiring Layout Mode 9]

[0096] FIG. 19 is a cross-sectional view of a substrate constituting a touch panel according to a modification of this mode. FIG. 19 differs from FIG. 11 in that an inner-surface reflection preventive film REF made of a SiO<sub>2</sub> thin film which covers a whole surface of a detection area is arranged under the metal lines MLINE. This mode is applicable to the stripe-shaped metal wiring in the wiring layout modes 1 to 5. A conventional touch panel uses transparent electrodes thus pushing up a manufacturing cost. According to this mode, since the inner-surface reflection preventive film can be manufactured at a low cost, it is possible to manufacture a display device which satisfy both high display quality and a low manufacturing cost.

[0097] The present invention is not limited to the above-mentioned embodiment and modifications, and various other modifications are conceivable without departing from the gist of the present invention. For example, the constitution explained in the embodiment can be replaced with the constitution substantially equal to the above-mentioned constitution, the constitution which can achieve the same manner of operation and advantages as the above-mentioned constitution or the constitution which can achieve the same object as the above-mentioned constitution.